EXHIBIT 194 REDACTED

First Price Bernanke

Background and Motivations

In second price world, Bernanke was responsible for hitting publisher margins.

GDA V1 Bernanke Auction

AdX Auction

Bernanke

for

First Price

Margin Optimization in First Price

We want to satisfy per-pub and network-wide margin constraints.

Allow First Price Bid Optimization

We want to use a first price surplus maximizer to optimize bids on top of optimizing the publisher margins.

Incentive Compatibility

We want the framework to be truthful and allow our second price bidding frameworks to function in the first price world.

Robustness: Revenue/Profit Optimization

Similar to Global Bernanke, we want this framework to allow further optimizations on top of maximizing advertiser surplus.

Intuition

- Similar to Bernanke, we need a parameter () that allows us to increase/decrease the margin and bid optimally:
- Similarly, we need a parameter () that tunes the arbitrage created from having an internal second price auction while submitting first price bid:

First Price Bernanke

- Offline (Training): Use data from background experiments with different alpha and beta multipliers per pub that hit a global margin and satisfy per pub margin.
- Online (Serving): For a query q with publisher s where the winner and runner-up of Adword

Mini-Auction have

respectively:

Winner is charged enough to beat both internal and external competition.

Impact

Compared to	Revenue	Payout	Value
Bid Translation			
Just Maximizing Surplus		+	

Background Experiments



High Level Design:

